

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of manufacturing an embedded multilevel interconnection, comprising:

- (1) ~~a step of forming a hole portion in an insulating layer;~~
- (2) ~~a barrier metal film forming step of forming a barrier metal film mainly made of~~comprising tantalum and nitrogen in such a manner that the barrier metal film covers at least an inner wall of the hole portion, an element composition ratio (N/Ta) of nitrogen to tantalum contained in the barrier metal film being  $0.3 \leq \text{N/Ta} \leq 1.5$ ~~or higher but 1.5 or lower;~~
- (3) ~~a removal step of removing an oxide film formed on a surface of the barrier metal film; and~~
- (4) ~~an electroless plating step of immersing the barrier metal film in a plating liquid comprising copper and thereby forming an electroless copper plating film on the barrier metal film.~~

2. (Currently Amended) The method according to claim 1, wherein the element composition ratio (N/Ta) is  $0.3 \leq \text{N/Ta} \leq$  ~~or higher but 1.0 or lower.~~

3. (Currently Amended) The method according to claim 1, wherein ~~the barrier metal film forming step is a plasma nitriding step at which~~ act (2) comprises irradiating nitrogen plasma is irradiated upon a surface of a film which is mainly made of tantalum and accordingly nitriding tantalum.

4. (Currently Amended) The method according to claim 1, wherein ~~the removal step is such a step at which~~ act (3) comprises removing the oxide film is removed and leaving the barrier metal film is left in such a manner that the barrier metal film entirely covers the inner wall of the hole portion.

5. (Currently Amended) The method according to claim 1, wherein ~~the removal step is such a step at which~~ act (3) comprises immersing the barrier metal film is immersed in a solution selected from ~~the~~ a group consisting of a mixture of a hydrofluoric acid, ~~and a nitric acid and a diluent of a~~ diluted hydrofluoric acid, and wherein the oxide film is selectively removed.

6. (Currently Amended) The method according to claim 1, wherein ~~the electroless plating step is such a step at which~~ act (4) comprises immersing the barrier metal film is immersed in a plating liquid which ~~uses~~ comprises a glyoxylic acid as a reducer.

7. (Currently Amended) The method according to claims 1, further comprising a ~~step of forming an electrolytic copper plating film on the electroless copper plating film~~ by using the electroless copper plating film as a seed layer.